We claim:

1. A process for preparing purified 1,3-substituted imidazolium salts of the formula (I)

5

where

10

15

the radicals R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are each, independently of one another, a carbon-comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens, where adjacent radicals R1 and R<sup>2</sup>, R<sup>2</sup> and R<sup>3</sup> or R<sup>3</sup> and R<sup>4</sup> may also be joined to one another and the radicals R<sup>2</sup> and R<sup>3</sup> may each also be, independently of one another, hydrogen, halogen or a functional group;

and

20

A<sup>a-</sup> is the partly or fully deprotonated anion of an inorganic or organic protic acid H<sub>a</sub>A (III), where a is a positive integer and indicates the charge on the anion,

25

by reacting a 1,3-substituted imidazolium salt of the formula (II),

$$\begin{bmatrix} R2 & R3 \\ + & \\ R1 & N & R4 \end{bmatrix}^{+} Y_{1/y}^{y_{-}}$$
(II),

where the radicals R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined above and the anion Y<sup>y-</sup> is 30 the partly or fully deprotonated anion of an inorganic or organic protic acid H<sub>v</sub>Y (IV), where y is a positive integer and indicates the charge on the anion, with 5

30

35

40

a strong base at from 20 to 250°C while distilling off the 1,3-substituted imidazol-2-ylidene formed, wherein the 1,3-substituted imidazol-2-ylidene which has been distilled off is brought into contact in the gaseous state with the protic acid  $H_aA$  (III) and/or the 1,3-substituted imidazol-2-ylidene which has been distilled off is passed in the gaseous or condensed state into a receiver comprising the protic acid  $H_aA$  (III).

- The process according to claim 1, wherein a purified 1,3-substituted imidazolium salt (I) in which the radials R¹ and R⁴ are each, independently of one another, methyl, ethyl, 1-propyl, 2-propyl, 1-butyl, 1-pentyl, 1-hexyl, 1-heptyl, 1-octyl, 1-nonyl, 1-decyl, 1-dodecyl, 1-tetradecyl, 1-hexadecyl, 1-octadecyl, 1-(2-ethyl)hexyl, benzyl, 3-phenylpropyl, 6-hydroxyhexyl or phenyl and the radicals R² and R³ are each, independently of one another, hydrogen, methyl, ethyl, n-propyl, 2-propyl, 1-butyl, 1-hexyl, 6-hydroxyhexyl, phenyl or chlorine is prepared.
  - 3. The process according to claim 1 or 2, wherein a purified 1,3-substituted imidazolium salt (I) in which the anion A<sup>a-</sup> is
- fluoride; hexafluorophosphate; hexafluoroarsenate; hexafluoroantimonate; trifluoroarsenate; nitrite; nitrate; sulfate; hydrogensulfate; carbonate; hydrogencarbonate; phosphate; hydrogenphosphate; dihydrogenphosphate; vinyl phosphonate; dicyanamide; bis(pentafluoroethyl)phosphinate; tris(pentafluoroethyl)trifluorophosphate; tris(heptafluoropropyl)trifluorophosphate; bis[oxalato(2-)]borate; bis[salicylato(2-)]borate; bis[1,2-benzenediolato(2-)O,O']borate; tetracyanoborate; tetracarbonylcobaltate;

tetrasubstituted borate of the formula (Va) [BRaRbRcRd], where Ra to Rd are each, independently of one another, fluorine or a carbon-comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens;

organic sulfonate of the formula (Vb) [Re-SO<sub>3</sub>], where Re is a carbon-comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens;

carboxylate of the formula (Vc) [Rf-COO], where Rf is hydrogen or a carbon-

comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens:

5

(fluoroalkyl)fluorophosphates of the formula (Vd)  $[PF_x(C_yF_{2y+1-z}H_z)_{6-x}]^T$ , where  $1 \le x \le 6$ ,  $1 \le y \le 8$  and  $0 \le z \le 2y+1$ ;

10

imide of the formula (Ve) [R<sup>9</sup>-SO<sub>2</sub>-N-SO<sub>2</sub>-R<sup>h</sup>], (Vf) [R<sup>1</sup>-SO<sub>2</sub>-N-CO-R<sup>i</sup>] or (IVg) [R<sup>k</sup>-CO-N-CO-R<sup>i</sup>], where R<sup>9</sup> to R<sup>i</sup> are each, independently of one another, hydrogen or a carbon-comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens;

15

methide of the formula (Vh)

$$\begin{bmatrix} SO_2-R^m \\ I \\ C \\ SO_2-R^o \end{bmatrix}$$
(Vh)

20

where R<sup>m</sup> to R<sup>o</sup> are each, independently of one another, hydrogen or a carbon-comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens;

25

organic sulfate of the formula (Vi) [RPO-SO<sub>3</sub>], where RP is a carbon-comprising organic, saturated or unsaturated, acyclic or cyclic, aliphatic, aromatic or araliphatic radical which has from 1 to 30 carbon atoms and may comprise one or more heteroatoms and/or be substituted by one or more functional groups or halogens; or

30

halometalate of the formula (Vj) [M<sub>q</sub>Hal<sub>r</sub>]<sup>s-</sup>, where M is a metal and Hal is fluorine, chlorine, bromine or iodine, q and r are positive integers and indicate the stoichiometry of the complex and s is a positive integer and indicates the charge on the complex;

35

is prepared.

- 4. The process according to any of claims 1 to 3, wherein a purified 1,3-substituted imidazolium salt (I) in which the anion A<sup>a-</sup> is tetrafluoroborate. hexafluorophosphate, trifluoromethanesulfonate, methanesulfonate, formate, 5 acetate, mandelate, nitrate, nitrite, trifluoroacetate, sulfate, hydrogensulfate, methyl sulfate, ethyl sulfate, propyl sulfate, butyl sulfate, pentyl sulfate, hexyl sulfate, heptyl sulfate, octyl sulfate, phosphate, dihydrogenphosphate, hydrogenphosphate, propionate, tetrachloroaluminate, Al<sub>2</sub>Cl<sub>7</sub>-, chlorozincate, 10 chloroferrate, bis(trifluoromethylsulfonyl)imide, bis(pentafluoroethylsulfonyl)imide, tris(trifluoromethylsulfonyl)methide, bis(pentafluoroethylsulfonyl)methide, p-toluenesulfonate, bis[salicylato(2-)]borate, tetracarbonylcobaltate, dimethylene glycol monomethyl ether sulfate, octyl sulfate, oleate, stearate, acrylate, methacrylate, maleate, hydrogencitrate, vinyl phosphonate, 15 bis(pentafluoroethyl)phosphinate, bis[oxalato(2-)]borate, bis[1,2-benzenediolato(2-)O,O']borate, dicyanamide, tris(pentafluoroethyl)trifluorophosphate, tris(heptafluoropropyl)trifluorophosphate, tetracyanoborate or chlorocobaltate is prepared.
- 5. The process according to any of claims 1 to 4, wherein a 1,3-substituted imidazolium salt (II) in which the anion Y<sup>y-</sup> is chloride, bromide, methanesulfonate, hydrogencarbonate, carbonate, hydrogensulfate, diethylphosphate, tosylate or methyl sulfate is prepared.
- 25 6. The process according to any of claims 1 to 5, wherein the 1,3-substituted imidazol-2-ylidene which has been distilled off is brought into contact in the gaseous state with gaseous protic acid H<sub>a</sub>A (III) and the condensed, purified 1,3-substituted imidazolium salt (I) is isolated.
- 7. The process according to any of claims 1 to 5, wherein the 1,3-substituted imidazol-2-ylidene which has been distilled off is passed in the gaseous state into a receiver comprising the protic acid H<sub>a</sub>A (III) and the purified 1,3-substituted imidazolium salt (I) is isolated therefrom.
- 35 8. The process according to any of claims 1 to 5, wherein the 1,3-substituted imidazol-2-ylidene which has been distilled off is condensed in a condenser, passed in the condensed state into a distillation receiver comprising the protic acid H<sub>a</sub>A (III) and the purified 1,3-substituted imidazolium salt (I) is isolated therefrom.

9. The process according to any of claims 1 to 8, wherein the distillation is carried out at a pressure of from 0.0001 to 0.15 MPa abs.